

# MOHAA Tutorial Package V1.4

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## Table of Contents

This document (Table of Contents) has been made in order to make it easier to locate things in this huge bundle of tutorials, in many, many folders. It will include all the folders on alphabetical order and it will list every document (tutorial) in every folder, and also every chapter within every document. This way, you can simply search for a keyword in this document and locate in which tutorials they talk about your chosen keyword. When you've found what you're looking for, simply check in which folder it is located. Press **CTRL+F** to search this document for keywords (*if you can't find what you're looking for; try different keywords that have the same or similar meaning*).

### Included Software/Utilities:

- Lightray 3D V1.4, V1.4.1 & V1.5 Beta (Key included)
- MBuilder
- Milkshape 3D V1.8.5 (Key included)
- MOHSH SDK
- MOHAATools (Radiant)
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- Admin.ini Editor (in Reborn's folder)
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- MOHAA Tools V1.6b (in Scorpio Midget's folder)
- Blender Quake BSP Importer (in Andrew Palmer's folder)
- OpenSCR (in Swagel's folder)
- MOHAA Script Framework (in \$or's folder)
- Thread Viewer (in jv\_map's folder)
  
- Various other possibly useful tools inside the 'Misc. Tools' folder (incl. Bot Files & BSP Compilers).

### Document Organization Structure



= Folder Names



= Document Names (inside folder)



= Chapter Names (inside document)



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  - Portal Skies
  - Adjusting and setting the far clipping plane from script and the editor
  - Adding lensflares to objects from script
  - Making an entity static, ie part of the world geometry a.k.a. misc\_model
  - Fullbright bits and how they work
  - Lighting preview in the editor
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    - **Shader File Location**
    - **Shader and Texture Names**
    - **Shader Keywords**
    - **More Advanced Shader Concepts**
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      - **Power Has a Price**
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  - **entityMergable**



- fogonly
- fogparms
- if
- light
- nomipmaps
- nopicmip
- force32bit
- polygonOffset
- portal
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- sort
- spriteGen
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  - Q3map\_flare
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  - Q3map\_lightimage
  - Q3map\_lightsubdivide
  - Q3map\_sun
  - Q3map\_surfaceLight
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  - surfaceAngle
  - surfaceColor
  - surfaceDensity
  - surfaceLight
  - surfaceparm
    - alphashadow
    - areaportal
    - cameraclip
    - detail
    - fog
    - ladder
    - lava
    - monsterclip
    - nodamage
    - nodraw
    - nodrop
    - noimpact
    - nolightmap
    - nomarks
    - nosteps
    - nonsolid
    - origin
    - playerclip
    - ricochet
    - sky
    - slick

- slime
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  - trans
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  - Qer\_nocarve
  - Qer\_trans
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    - Technical Information/Limitations Regarding Blend Models
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  - depthFunc
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- **FoxTrot**
  - **Ascii Tutorial**
- **Gary Simmons (Mr. Gamemaker)**
  - **Binary Space Partitioning (BSP) Tutorial Part I**
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    - **The 'Clip Portal' Function (Pretty Scary)**
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      - **Creating an Anti-Penumbra**
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    - **The 'CalculatePVS' Function**
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  - WOW! We Have Finished Our PVS Calculator
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    - Extracting the Frustum Planes
    - Culling the AABB's From the Frustum
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  - WorldGen LE (World Editor Package)
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  - Liberation Tutorial
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    - How do I get sound to work?
    - What do I need to change in the .scr file?
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    - How do I reference an individual character in my script?
    - How do I reference the players in my script?
    - How do I display messages on the players screen?
    - Why do I get 'Need Localisation' errors in the console?
    - Where do I put my code?
    - How can I make the levels easier to start?
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- Jeff Lee
  - Face Skinning Tutorial
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- Joel Anderson
  - View Space Linking, Solid Node Compressions and Binary Space Partitioning for Visibility Determination in 3D walk-throughs
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  - Milkshape Tutorial #6 – Upper Body
  - Milkshape Tutorial #9 – Animation Basics
  - Milkshape Tutorial #10 – Skeleton With Bones
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  - Milkshape Tutorial #12 – Animating a Walk Cycle
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- 21) Creating the Game Mission
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- **C) Game Development Tool Reference**
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- **D) QuArK Reference**
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  - **Other Features**
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  - **How the skin scan works**
  - **Match Watch**
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  - **Using Remote**
  - **Contacting Programmer**
  - **Startup Problems**
- **MOHAAC**
  - **MOHAAC Ban List**
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  - **MOHAAC Documentation**
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  - **ProMod Documentation**
  - **Scapp-host Documentation**
  - **Scapp-rcon builder Documentation**
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- **Mefy**
  - **Mefys Gametype Addon Tutorial**
- **Mike Martin**
  - **Quake 3 Smoothness Guide**
- **Milkshape 3D Team**
  - **Milkshape 3D Help Guide**
    - **Introduction**
    - **Using Milkshape 3D**
      - **Fundamentals**

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  - Menus
  - Toolbox
  - Keyframer
- **Essential Windows and Panels**
  - Model Statistics Window
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- **Tutorials**
  - Beginners Guide
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  - Setting up the Skeleton
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- **Appendices**
  - FAQ
  - Supported File Formats
  - 3D Theory & Practice
  - Help Credits
  - Help Me Help You
- Introduction to 3D Files with the help of MilkShape 3D *(In German)*
- A5 GameStudio MDL Export Tutorial
  - If you have more than one group
  - Gun Layout
  - Changing Skins
- How to use Spherify
  - Purpose
  - Box
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- How to use Transparency
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  - How to make a transparent material
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  - **How to create a tag**
  - **Creating a MD3 export control file**
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  - **Globalwidgetcommand for Serverside UI**
  - **Handgun Tutorial – Polygon in 3DSMax**
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  - **MOH Script Syntax Summary**
  - **Multiple Custom Textures**
  - **Weapon Modding Tutorial**
  - **HTM (Saved) Pages**
    - **Latest News on MOHAA Model Plugins**
    - **Modelling Tutorials**
    - **MOH, PK3 Analysis**
    - **MOHAA Model Skeletons (How they work)**
    - **MOHAA Unwrapped – Debugging, menus, commands and variables**
    - **SKL\_2\_SKX.exe information**
    - **Tut for Mike's Torso**
    - **Tutorial – Putting New Guns In-game by Godsmack**
  - **Coordinates**
    - **Coord Question**
    - **Help placing objects on maps (viewpos)**
    - **How do mohaa coords work**

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  - Spawn Object
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- **MOH SDK Documents**
  - **Client & Special Effect Reference**
    - Particles and Emitters
    - Client Commands References
    - Client Game Classes
  - **General Reference**
    - Terrain System Reference/Editing Manual
    - Radiant Feature List
    - Design FAQ
  - **Introduction**
    - **Getting Started Tutorial (Building a Room)**
      - Intro to brushes and the camera
      - Hollowing a room
      - Adding a player start and a light
      - Compiling and playing
  - **Server & Game Reference**
    - **Coordinate System Documentation**
    - **Misc Script Documentation**
      - Script Syntax Summary
      - Moveanim Commands
      - Anim attached commands
      - Model Surface Script Control
      - PlayerSpawn Stuff
      - Camera Tutorial
      - Description of the use of Huddraw set of script commands
      - Scripting Objectives
      - Mission Briefing Tutorial
      - Awarding Medals
      - Giving and Taking Stuff from the Player
      - Gun Turrets
    - **AI Tips**
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      - AI Parameters
      - Leash
      - Enemy Selection
      - How AI Initially Sees An Enemy
      - Making AI Look Smart
    - **Game Commands & Variables**
    - **Game Classes**
  - **Tutorials**
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      - Rendezvousing with your allied soldiers
      - Your first enemy encounter and destroying the Flak88
      - Setting up an MG-42 gunner and making 2 enemies jump out of a truck
    - **Decal Tutorial**
    - **Driving Tutorial 1**
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  - **Manvis Tutorial**
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    - Why Should I use Manvis?
    - Practical Examples
    - How Do I Set Up Manvis?
    - Problems With This Setup
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    - The Vis Derived Option
  - **Riding Tutorial**
  - **TOW (Tug-of-War) Tutorial**
- **UI Reference**
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- **MPowell1944**
  - **Flak 88 Tutorial**
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    - **Configuring MBuilder**
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    - **Shortcut keys and mouse functions in Q3Radiant**
    - **Where to save map**
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  - Ladders
  - Lighting up a Light Bulb
  - Water
  - Adding nice pictures to Walls
  - Detailed Brush's and Cut vis Compile Time
  - Make Destroyed Walls
  - Making 2 Rooms and a Hall
  - Miter your corners
  - Spawn Points
  - Stop Walking Through Models
- Intermediate
  - Ambient Light
  - Bending a Brush
  - LOD Terrain
  - Sunflares
  - Turret Gun
  - Windows
  - Destroyed Walls (Advanced)
  - L Shaped Roof
  - Photoshop Tutorial for Terrain Picture
  - Terrain (with EasyGen)
- Advanced – Scripting
  - Adding a flying plane
  - Blow up and cause damage
  - Custom Load Screen
  - Custom Textures
  - Multiplayer AI
  - Music for Map
  - Plane Sound
  - Random Explosions
  - See through windows
  - Blow stuff up
  - Destroying Walls & Blocks
  - Fog
  - Make a .scr for your map
  - Sound to explosion
- Allies breached the perimeter script
- Mapping Definitions
- Mapping FAQ
- Nick
  - Radiant Tips
    - The Basics
    - Lights
    - Spawn Points
    - Basic Room
    - How to test map
    - Sky
- Other
  - Compile Errors
  - Get rid of mysterious light leaks
  - How to make a Minefield

- Mapping FAQ
- MOH Read-Me Template
- Trying to get a moving U-Boat
- Paul Jaquays
  - GtkRadiant Editor Manual
    - **Preface**
    - **Introduction**
    - **Minimum System Requirements**
      - Minimum System
      - Recommended System
      - What doesn't work (well).. and how to fix it
    - **Installation & Set-Up**
      - Installing the Editor
      - Setting up Paths
      - Improving Performance
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        - Global
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      - Project Settings
      - Build Menu
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        - The Camera Window (CAM)
        - Orthographic Window(s) – The Grid
        - Colors
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      - What are Entities?
      - What are Assets?
      - Creating new Assests
        - Creating Textures
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      - Making the .pk3 file
        - My .pk3 file is HUGE! No one is downloading it!
    - **Map-Building Basics**
      - Moving Around
        - Moving in All Directions
        - Flying through the Map
        - Zoom with a View
        - Jump to Location
        - Moving the Maps Around
      - Basic Construction Tutorial
        - Quick & Dirty Steps to a SIMPLE room
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      - Selecting Objects and Components
      - Copying, pasting, cloning, deleting and prefabs
      - Working with regions
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  - Move Objects
  - Mirror Objects
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  - Clipper
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- Brush Menu Commands
  - Poly-Sided Brushes
  - Primitives
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- Efficient Brush Building Techniques
  - Brush Construction
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  - Caulking
  - Misc. Tips
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    - Insert
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    - Moving Selected Curve Patch
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  - Texture Creation: Making new assets
  - Texture Manipulation: Shader overview
    - Shaders and Multi-Pass Texture Effects
  - Texture Application: Texture Handling Tools
    - View Textures
    - Hide Unused

- Show All
  - Surface Inspector
  - Find / Replace
  - Texture Lock
  - Directory List
  - Shaders
  - Texture Directories
  - Texture Shift Key Shortcuts
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    - Entity List
    - Key Descriptions
    - Check box Spawn Flags
    - Active Properties
    - Key & Value Fields
    - Angle Buttons
    - The Other Buttons
  - Entity handling tools
    - Escape
    - Connect Entities
    - Ungroup Entity
    - Moving Selected Entity
    - Nudging the Entity
    - Changing Facing
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  - “Sky” Lights
  - Ambient Light
- **Tools 7: Misc. Commands**
  - Feedback & read-outs
    - Cursor Coordinates
    - Brush & Entity Counter
    - Selection
    - Origin
    - Cursor Travel Distance
    - Control Settings
  - Viewing, seeing, not seeing, and hiding
    - Toggle
    - Camera
    - Orthographic
    - Show
    - Hide/Show
    - Show Brush/Patch Dimensions
  - File management commands
    - New Map
    - Open

- Save
  - Save As
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- Project
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  - Map Info
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  - The Build Menu
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    - The Pointfile
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    - Junk.txt
    - Error Messages
  - In-game Debug tools
    - General Cheats
    - General Toggle Binds
    - Debug Mode: Logfile Creation
    - GL\_Showtris/R\_Speeds/FrameCounter Toggle
    - Lock the PVS Table
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    - Turning Off Curves and Entities
  - Curves, caulk, T-Junctions and cracks
    - An Explanation of "Z-Fighting"
    - An Explanation of T-Junction Cracks
    - Avoiding T-Junction Cracks and Z-Fighting
    - Finding and Fixing T-Junction Cracks and Z-Fighting
  - A debug config
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  - Func\_\* entities
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  - Light entity
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  - Path\_\* entities
  - Shooter\_\* entities
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  - Usage
  - Updating the entity lump
  - Leaks
  - Useful map information
    - Map Boundaries
    - Game Physics
  - Optimizing a map for bspc compiling
  - Entities & the navigation file
    - Func\_plat and Func\_bobbing
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    - Solid Areas
  - Version Changes
- **Appendix D: Tips, Tricks and Tutorials**
  - Making the death-fall sound
  - Making a mirror
  - Making a jump pad
    - Lining Up the Pad Texture
  - Making a launch pad
  - Making a “Rocket Arena” style map
  - Making an environment box
  - Making a shooter
- **Appendix E: Online Resources**
  - News about the editor
  - Editing tutorials
  - Editing tools
  - Prefab sources
  - Texture sources
  - Map object model sources
  - Sounds
  - FAQ
  - Map reviews, general information
- **Appendix F: Default Key Shortcuts**
- **Appendix G: Shortcut Keys and Mouse Functions**
  - Preface
  - Introduction
  - Shortcut Key List
  - Mouse Function List
- **Q3Radiant Editor Manual**
  - **Preface**
  - **Introduction**
  - **Minimum System Requirements**
    - Minimum System
    - Recommended System

- What doesn't work (well).. and how to fix it
- **Installation & Set-Up**
  - Installing the Editor
  - Setting up Paths
  - Improving Performance
  - Setting up Preferences
    - Optimizing Interface for
    - Mouse
    - Views / Rendering
    - Camera
    - Texturing
    - New Functionality
    - Game Path / Tool Settings
  - The Project File
    - New Project
    - Load Project
    - Changing the Project File
  - Setting up the Windows
    - The Camera Window (CAM)
    - Entity/Texture/Console/Group Window
    - Z-Axis Scale Window
    - Map Window(s) – The Grid
    - Colors
- **Entities and Assets**
  - What are Entities?
  - What are Assets?
  - Creating new Assests
    - Creating Textures
    - Creating Sounds
    - Creating Models
  - Making the .pk3 file
    - My .pk3 file is HUGE! No one is downloading it!
- **Map-Building Basics**
  - Moving Around
    - Moving in All Directions
    - Flying through the Map
    - Zoom with a View
    - Jump to Location
    - Moving the Maps Around
  - Basic Construction Tutorial
    - Quick & Dirty Steps to a SIMPLE room
- **Tools 1: Selecting and Deselecting**
  - The component handling tools
  - Group component selections
  - Copying, pasting, cloning, deleting and prefabs
  - Working with regions
- **Tools 2: Working with Brushes**
  - Geometry Brush Handling Tools
    - Create New Brush
    - Move Geometry Brush
    - Stretching the Brush



- Shrinking the Brush
  - Flip Brush
  - Rotate Brush
  - Arbitrary Rotation
  - Free Rotate in Map Window
  - Drag
  - Scale
  - CSG Operations
  - Clipper
  - Make Detail
  - Make Structural
  - Func\_Group
  - Find Brush
  - Brush Scripts
- **Brush Menu Commands**
  - Poly-Sided Brushes
  - Primitives
- **Moving Selected Brushes**
  - Moving the Brush
  - Nudging the Brush
  - Snap Selection To Grid
- **Efficient Brush Building Techniques**
  - Brush Construction
  - Brush Counts
  - Caulking
  - Misc. Tips
- **Tools 3: Working with Curve Patches**
  - **Curve Menu Commands**
    - Cylinder
    - End Cap
    - Bevel
    - Cone
    - Sphere
    - Simple Patch Mesh
    - Insert
    - Delete
    - Matrix
    - Cap
    - Overlay
    - Thicken
  - **Patch Tool Bar**
    - Don't Select Curved Brushes
    - Show Patch Bounding Box
    - Show Patches as Wireframe
    - Patch Bend Mode
    - Redisperse Patch Points
    - CAP
  - **Moving Patches**
    - Moving Selected Curve Patch
    - Nudging the Curve Patch
    - Snap Selection To Grid

- **Tools 4: Working with Textures**
  - Brush Primitives: A new format
  - Texture creation: Making new assets
  - Texture manipulation: Shader overview
    - Shaders and Multi-Pass Texture Effects
  - Texture application: Texture Handling Tools
    - View Textures
    - Show in Use
    - Show All
    - Surface Inspector
    - Find / Replace
    - Texture Lock
    - Load from List
    - Shaders
    - Flush
    - Texture Window Scale
    - Texture Directories
    - Texture Shift Key Shortcuts
    - Texture Rotate Key Shortcuts
    - Texture Scaling Shortcuts
  - Using Interactive Textures
    - Texture Entities
- **Tools 5: Working with Entities**
  - The entity window
    - Entity List
    - Key Descriptions
    - Check box Spawn Flags
    - Active Properties
    - Key & Value Fields
    - Angle Buttons
    - The Other Buttons
  - Entity handling tools
    - Connect Entities
    - Ungroup Entity
    - Moving Selected Entity
    - Nudging the Entity
    - Rotating Entities = BAD!
    - Changing Facing = GOOD!
    - Mass Rotations
- **Tools 6: Lights & Lighting**
  - Entity Lights
  - Texture Lights
  - “Sky” Lights
  - Ambient Light
- **Tools 7: Misc. Commands**
  - Feedback & read-outs
    - Z-Axis Layers
    - Cursor Coordinates
    - Brush & Entity Counter
    - Selection
    - Origin

- Cursor Travel Distance
  - Control Settings
- Viewing, seeing, not seeing, and hiding
  - Toggle
  - Center
  - Up Floor
  - Down Floor
  - Next (XY, YZ, XZ)
  - Layout
  - Zoom
  - Show
  - Hide/Show
  - Entities as....
  - Cubic Clipping
  - Open GL Lighting
  - Show Brush/Patch Dimensions
- File management commands
  - New Map
  - Open
  - Save
  - Save As
  - Save Selected
  - Save Region
  - Reopening Maps
- Projects and Preferences
- Misc. Commands
  - Map Info
  - Entity Info
  - Preferences
- Opening Menus from the Keyboard
- Tools 8: Compiling Maps
  - The BSP Menu
- Tools 9: Debugging Maps
  - The editor's debug tools
    - The Pointfile
    - Next leak spot
    - Previous leak spot
    - Junk.txt
    - Error Messages
  - In-game Debug tools
    - General Cheats
    - General Toggle Binds
    - Debug Mode: Logfile Creation
    - GL\_Showtris/R\_Speeds/FrameCounter Toggle
    - Lock the PVS Table
    - MultiPass Texturing Toggle
    - Turning Off Curves and Entities
  - Curves, caulk, T-Junctions and cracks
    - An Explanation of "Z-Fighting"
    - An Explanation of T-Junction Cracks
    - Avoiding T-Junction Cracks and Z-Fighting

- Finding and Fixing T-Junction Cracks and Z-Fighting
  - A debug config
- **Appendix A: Glossary of Terms**
- **Appendix B: Entity Descriptions**
  - Basic Key Information
  - Ammo\_\* entities
  - Func\_\* entities
  - Holdable\_\* entities
  - Info\_\* entities
  - Item\_\* entities
  - Light entity
  - Misc\_\* entities
  - Path\_\* entities
  - Shooter\_\* entities
  - Target\_\* entities
  - Team\_\* entities
  - Trigger\_\* entities
  - Weapon entities
  - Worldspawn entity
- **Appendix C: Bot Navigation Files**
  - Introduction
  - Description
  - Installation
  - Usage
  - Updating the entity lump
  - Leaks
  - Useful map information
    - Map Boundaries
    - Game Physics
  - Optimizing a map for bspc compiling
  - Entities & the navigation file
    - Func\_plat and Func\_bobbing
    - Cluster Portals
    - “Do Not Enter” Areas
    - Bot Control Entities
  - Testing AAS files
    - Solid Areas
  - Version Changes
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- **Appendix G: Shortcut Keys and Mouse Functions**
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  - Introduction
  - Shortcut Key List
  - Mouse Function List
- **Resources/Links List (Use WayBackMachine)**
  - **Model Making Tools**
  - **Model Making Tutorials**
  - **GMAX Specific Tools and Tutorials**
  - **UVW Skin Mapping & Unwrapping Tools**
  - **UVW Skin Mapping & Unwrapping Tutorials**
  - **MD3 Exporting Tutorials**
  - **Animating Tools**
  - **Animating Tutorials**
  - **Skin Making Tools**
  - **Skin Making Tutorials**
  - **General Painting Tutorials**
  - **Bot Tools**
  - **Bot Tutorials & Resources**
  - **Misc. Tools & Utilities**
  - **Audio/Voice/Sound Resources**
  - **Quake 3 Model & Skin Resources**
  - **Useful Links & Resources**
- **PKM**
  - **Action Room Tutorial**
  - **Basic Skinning Tutorial**
  - **Advanced Skinning Tutorial**
- **Prima Games**
  - **Breakthrough Official Strategy Guide**
    - **Movement**
    - **Running & Walking**
    - **Strafing**
    - **Circle-Strafing**
    - **Crouching**
    - **Jumping**
    - **Climbing**
    - **Compass & Navigation**
    - **Weapons Training**
    - **Aiming**
    - **Firing**
    - **Reloading**
    - **Combat Tactics**
    - **The Rifle-Butt Strike**

- Popping Smoke
  - Shoot & Scoot
  - Room Clearing
  - Commendations
  - Campaign Medals
  - Career Medals
- Prometheus
  - Lightray 3D Tutorials
    - Beginner
      - Attaching & Detaching Meshes
      - Background Images
      - Basic UVMapping Tutorial
      - Create Object Dialog
      - Creating Vertices & Faces
      - Lightray 3D Basics
      - Link & Unlink Objects
      - Loading Images into the Material Editor
      - Mesh Normals & Smoothing
      - Mesh to Skin
      - Modify Objects Dialog
      - Select, Move, Rotate, Scale, Pivot, Coord Systems
      - Toolbars & Dialogs
      - Welding Vertices
    - Intermediate
      - Applying UV Mapping
      - CoDUO MP Tank Analysis
      - Creating a New Weapon
      - Creating Animations
      - Exporting a file from LR3D and Importing in COD
      - Skin Texture Painting
      - The Process of Creating Skin
      - Using Modifiers Tutorial
      - Using Splines to Create a Gun Model
    - Advanced
      - Inverse Kinematics
- Quake
  - Bubba
    - Advanced Mapping
      - Arches
      - Bended Columns
      - Bobbing Brushes
      - Camera Portals
      - Complex Doors – Buttons
      - Creating a Pendulum
      - Creating Doors
      - Creating Landscapes
      - Custom Textures
      - Light Beams
      - Making Team-CTF Levels
      - Mirrors

- Moving Platforms and Trains
  - Moving Spines
  - Ramps
  - Rotating Brushes
  - Spiral Staircases
  - Suspended Items
  - Twisted Pillars
  - Using Prefabs
  - Using Sound
  - Water Tunnels
- **Basic Mapping**
  - Basic Entities and Placement
  - Basic Shapes
  - Building Stairs
  - Compiling
  - Connecting Rooms
  - Editing Shortcuts
  - Introduction
  - Jump Pads
  - Liquids
  - Making a pk3 File
  - Models and Shaders
  - Teleporters
  - Volumetric Fog
  - Your First Room
- djbob
  - **Hints**
- Eric Wasylishen
  - **QBSP (Compile a Quake BSP file from a MAP source file)**
    - Name
    - Synopsis
    - Description
    - Options
      - **–nofill**
      - **–noclip**
      - **–noskip**
      - **–onlyvents**
      - **–verbose**
      - **–noverbose**
      - **–splitspecial**
      - **–transwater**
      - **–notranswater**
      - **–transsky**
      - **–nooldaxis**
      - **–forcegoodtree**
      - **–bspleak**
      - **–oldleak**
      - **–leaktest**
      - **–nopercent**
      - **–bsp2**

- -2psb
  - -leakdist [n]
  - -subdivide [n]
  - -wadpath <dir>
  - -oldrottex
  - -maxNodeSize [n]
  - -hexen2
  - -wrbrushes
  - -wrbrushesonly
  - -notex
  - -omitdetail
  - -convert <fmt>
  - **Special Texture Names**
    - Skip
    - Hint
  - **External Map Prefab Support**
    - \_external\_map
    - \_external\_map\_classname
    - \_external\_map\_angles
    - \_external\_map\_angle
    - \_external\_map\_scale
  - **Detail Brush Support**
  - **Detail Variants**
    - func\_detail\_illusionary
    - func\_detail\_wall
    - func\_detail\_fence
  - **Model Entity Keys**
    - "\_lmscale" "n"
    - "\_mirrorinside" "n"
  - **Other Special-Purpose Entities**
    - func\_illusionary\_visblocker
  - **Map Compatibility**
  - **Author**
  - **Reporting Bugs**
  - **Copyright**
  - **See Also**
- **Jex**
  - **Understanding Vis and Hint Brushes**
    - **Basic Vis Theory**
    - **Visual Vis Theory**
    - **Optimising Vis with Hint Brushes**
    - **Improper Hint Brush use**
    - **Irregular Hint Brush use**
    - **Creating Hint Brushes**
- **Lloyd M**
  - **Terragen Tutorial for Skyboxes**
- **Obsidian**
  - **Advanced Portal & Hinting Optimization Tutorial**
  - **Class on Hints**
  - **Exporting Models**
  - **Q3Map2 Shader Manual**



- **0. Preface**
  - Credits
  - Contact
- **1. Introduction**
  - What is a Shader?
  - Shader Name & File Conventions
  - Q3map Suffix
  - Keyword Types
  - Documenting with Comments
  - Key Concepts
- **2. General Shader Keywords**
  - skyParms
  - cull
  - deformVertexes
  - fogParms
  - noPicMip
  - noMipMaps
  - polygonOffset
  - portal
  - sort
- **3. Q3Map2 Specific Shader Keywords**
  - q3map\_alphaMod
  - q3map\_backShader
  - q3map\_backSplash
  - q3map\_baseShader
  - q3map\_bounce
  - q3map\_bounceScale
  - q3map\_clipModel
  - q3map\_cloneShader
  - q3map\_extraShader
  - q3map\_fadeAlpha
  - q3map\_fogDir
  - q3map\_forceMeta
  - q3map\_forceSunlight
  - q3map\_fur
  - q3map\_globalTexture
  - q3map\_indexed
  - q3map\_invert
  - q3map\_lightImage
  - q3map\_lightmapAxis
  - q3map\_lightmapBrightness
  - q3map\_lightmapFilterRadius
  - q3map\_lightmapGamma
  - q3map\_lightmapMergable
  - q3map\_lightmapSampleOffset
  - q3map\_lightmapSampleSize
  - q3map\_lightmapSize
  - q3map\_lightRGB
  - q3map\_lightStyle
  - q3map\_lightSubdivide
  - q3map\_noClip

- q3map\_noFast
- q3map\_noFog
- q3map\_noPlanar
- q3map\_normalImage
- q3map\_noTJunc
- q3map\_noVertexShadows
- q3map\_offset
- q3map\_patchShadows
- q3map\_replicate
- q3map\_shadeAngle
- q3map\_skylight
- q3map\_splotchFix
- q3map\_styleMarker
- q3map\_styleMarker2
- q3map\_sun
- q3map\_sunExt
- q3map\_sunlight
- q3map\_surfacelight
- q3map\_surfaceModel
- q3map\_tcGen
- q3map\_tcMod
- q3map\_terrain
- q3map\_tessSize
- q3map\_textureSize
- q3map\_traceLight
- q3map\_vertexScale
- q3map\_vertexShadows
- q3map\_vlight
- **4. Q3Map2 Specific Surface Parameter Shader Keywords**
  - surfaceparm alphashadow
  - surfaceparm antiportal
  - surfaceparm areaportal
  - surfaceparm botclip
  - surfaceparm clusterportal
  - surfaceparm detail
  - surfaceparm donotenter
  - surfaceparm dust
  - surfaceparm flesh
  - surfaceparm fog
  - surfaceparm hint
  - surfaceparm ladder
  - surfaceparm lava
  - surfaceparm lightfilter
  - surfaceparm lightgrid
  - surfaceparm metalsteps
  - surfaceparm monsterclip
  - surfaceparm nodamage
  - surfaceparm nodlight
  - surfaceparm nodraw
  - surfaceparm nodrop
  - surfaceparm noimpact
  - surfaceparm nomarks

- surfaceparm nolightmap
- surfaceparm nosteps
- surfaceparm nonsolid
- surfaceparm origin
- surfaceparm playerclip
- surfaceparm pointlight
- surfaceparm skip
- surfaceparm sky
- surfaceparm slick
- surfaceparm slime
- surfaceparm structural
- surfaceparm trans
- surfaceparm water
- **5. Editor Specific Shader Keywords**
  - qer\_editorimage
  - qer\_nocarve
  - qer\_trans
- **6. Stage Specific Shader Keywords**
  - Texture Map Specification
  - blendFunc
  - tgbGen
  - alphaGen
  - tcGen
  - tcMod
  - depthFunc
  - depthWrite
  - detail
  - alphaFunc
- **7. Quake 3 Engine Game Specific Shader Keywords**
  - Return to Castle Wolfenstein
  - Return to Castle Wolfenstein: Enemy Territory
  - Raven
  - Ritual
- **8. Shader Effects Creation Tips**
  - Creating New Textures
    - Tools Needed
    - Setting up Files
    - Rules and Guidelines
    - Making the .pk3 File
  - Notes on Alpha Channels
  - Advanced Decal Tricks
    - Multiplicative Decals
    - Inverse Multiplicative Shadows
    - Using \_decal Entities
- **Appendix A: Triggerable Shader Entities**
- **Appendix B: Terrain Entities**
  - General Changes
    - Base Shader
    - tcMod Functions
    - tcGen Functions
  - Lightmapped Terrain

- q3map\_nonPlanar
    - q3map\_lightmapAxis
    - q3map\_shadeAngle
    - q3map\_lightmapMergable
    - q3map\_lightmapSampleSize
    - q3map\_lightmapSampleOffset
  - AlphaMod Dotproduct Terrain
  - AlphaMod Volume Terrain
- Appendix C: Foghull
  - What is a Foghull?
  - Skybox Images
  - Foghull Shaders
  - Entity Key Value Pairs
- Appendix D: Fur
  - q3map\_cloneShader
  - q3map\_fur
- Appendix E: Celshading
- Appendix G: Lightstyles
  - Worldspawn Keys
  - Lights
    - Light Entities
    - Light Emitting Shaders
  - Lightmapped Surfaces
  - Compiling
- Appendix I: Light Emitting Shaders
  - Surface Lights
  - Skies
  - Lighting Effects
- Shader Lighting Experiment
- Other
  - Lightmap Editing
- PBworks
  - Entity Explanation
    - Select
      - Select Complete Tall
      - Select Touching
      - Select Partial Tall
      - Select Inside
    - Undergroup Entity
    - Move into Entity
    - Move into worldspawn
    - Make detail (Ctrl+M)
    - Make structural (Shift+Ctrl+S)
    - Smart Entities
      - Smart\_train
    - Func
      - Func\_bobbing
      - Func\_button
      - Func\_door
      - Func\_door\_model
      - Func\_door\_rotating

- Func\_group
  - Func\_pendulum
  - Func\_plat
  - Func\_rotating
  - Func\_static
  - Func\_timer
  - Func\_train
- Info
  - Info\_alien\_intermission
  - Info\_human\_intermission
  - Info\_notnull
  - Info\_null
  - Info\_player\_intermission
- Light
- LightJunior
- Misc
  - Misc\_anim\_model
  - Misc\_light\_flare
  - Misc\_model
  - Misc\_particle\_system
  - Misc\_portal\_camera
  - Misc\_portal\_surface
  - Misc\_teleporter\_dest
- Path
  - Path\_corner
- Target
  - Target\_delay
  - Target\_kill
  - Target\_location
  - Target\_position
  - Target\_print
  - Target\_push
  - Target\_relay
  - Target\_rumble
  - Target\_score
  - Target\_speaker
  - Target\_teleporter
- Team
  - Team\_alien\_acid\_tube
  - Team\_alien\_barricade
  - Team\_alien\_booster
  - Team\_alien\_hoevel
  - Team\_alien\_overmind
  - Team\_alien\_spawn
  - Team\_alien\_trapper
  - Team\_alien\_hive (not in standard entity file)
  - Team\_human\_armoury
  - Team\_human\_dcc
  - Team\_human\_medistat
  - Team\_human\_mgturret
  - Team\_human\_reactor

- Team\_human\_repeater
  - Team\_human\_spawn
  - Team\_human\_tesla
- Triggers
  - Trigger\_always
  - Trigger\_ammo
  - Trigger\_buildable
  - Trigger\_class
  - Trigger\_equipment
  - Trigger\_gravity
  - Trigger\_heal
  - Trigger\_hurt
  - Trigger\_multiple
  - Trigger\_push
  - Trigger\_stage
  - Trigger\_teleport
  - Trigger\_win
- Worldspawn
- Plan B
  - My Take on Caulk hull/overdraw/hinting
  - Thicken
- Quakin
  - Sample Map: An Explanation
- RiceBug
  - Common Error Messages
  - Q3A Error Messages
- RKone
  - Curved Trim Tutorial
- skOre
  - Q3A Electronics
    - 1. Mechanics
      - 1.1 The Basics
        - Complex Func\_ing, Trigger\_ing and Target\_ing
        - How to create pop up effects
      - 1.2 Advanced Triggering
      - 1.3 More Complex Examples of AT
        - The Teleport-Tunnel
        - Furthermore: The Teleport-Tunnel
        - Interlude: First Steps Done
    - 2. Basic Electronics
      - 2.1 Q3A Electronics
        - The AND-Gate
        - The NOT-Gate
        - The OR-Gate and Interlude
        - The EQUIV-Gate
        - The XOR-Gate
      - 2.2 Gates and Beyond
        - Flip Flops
      - 2.X The Use of Q3A Electronics
- SmallPileofGibs
  - Hint Brushes: How and why to use them

- **Q3 Map Explanation**
    - Geometry Definitions
    - Map Definitions
    - What does the BSP stage do?
    - How and why is the BSP created?
    - How can I control the BSP splits? (a way to use *detail* and Hint brushes)
    - What is a leak?
    - What is the .prt file?
    - How are the brushes/patches turned into triangles?
    - How is the PVS created?
    - What does –vis –fast do?
    - How do Potals affect visibility?
    - How can I make VIS more efficient? (and reduce –vis processing time)
    - How do lightmaps work?
    - How are lightmaps generated?
    - What about surface lights?
    - What does –light –extra do?
    - How does BSPC interpret the map?
    - What is the ‘Brush CSG’ stage of BSPC?
    - How is the area file created?
    - How do Bots use the area file?
    - How do I make Clusterportals?
  - **Timbo**
    - **Q3 Documentation Project**
      - GAME
      - CGAME
      - Q3UI
- **RazoRapid**
  - **CGM Bugger List**
- **Reborn**
  - **Admin.ini Editor Documentation**
  - **Reborn Patch Documentation**
    - **New Admin Commands**
    - **Admin System (Admin Rights)**
    - **New Game CVARs**
    - **New Client Commands**
    - **New Voting System**
    - **Auto-Update System**
    - **Notes**
  - **New EventSystem Engine Documentation**
  - **New Scripting Commands Documentation**
  - **Reborn Console Messages**
    - **Information**
    - **Warnings**
    - **Errors**
    - **Script Errors**
    - **Exceptions**
    - **Others**
  - **Reborn Files & Limits**

- Files
  - Limits
  - Constants
- Reborn Installation Guide
  - Overview
  - Windows Installation
    - Quick Guide
    - Detailed Guide
  - Linux Installation
    - Quick Guide
    - Detailed Guide
  - Additional Information
- Reborn RCON Commands
- Riflemen
  - Weapon Skin Tutorial
- RingDog
  - Model List – AA
  - Model List – SH
  - Model List – BT
- RyBack
  - NightFall Documentation
    - Installing NightFall
    - NightFall API Client
    - NightFall API Server
    - NightFall Client Admin Commands
    - NightFall CVARs
    - NightFall Filters
    - NightFall RCON Commands
    - NightFall Script Event System
    - NightFall Scripting Functions
- Scorpio Midget
  - MOHAA Tools Information
  - MOHAA Unwrapped
    - Debugging
    - Menus
    - Commands
    - List of CFG Files
    - List of Menus
    - Variables (cvarlist)
    - Commands (cmdlist)
    - 3 useful debugging threads
- Selzi
  - Beginning with Mapping
    - MOHRadiant
    - MBuilder
    - PakScape
  - Mapping First Room
- Shadow
  - The Ultimate Compile Errors List
  - Abbreviations
  - Cheat Commands (To protect against)



- Default Commands/CVARs
  - Custom (Hexed) Commands/CVARs
- Cheat Skins (To protect against)
- Custom Sky Textures
- Freeze-Tag Locations All Maps
  - Southern France (dm/mohdm1)
  - Destroyed Village (dm/mohdm2)
  - Remagen (dm/mohdm3)
  - The Crossroads (dm/mohdm4)
  - Snowy Park (dm/mohdm5)
  - Stalingrad (dm/mohdm6)
  - Algiers (dm/mohdm7)
  - The Hunt (obj/obj\_team1)
  - Omaha Beach (obj/obj\_team3)
  - The Bridge (obj/obj\_team4)
  - St. Lo (obj/stlo)
  - Fort Wreck (dm/fortwreck)
  - St. Renan (obj/renan)
  - Morocco (dm/morocco)
  - Deep Mine (obj/deepmine)
  - Brest (mp\_brest\_dm)
  - Verschneit (mp\_verschneit\_dm)
  - Stadt (mp\_stadt\_dm)
- Freeze-Tag Locations V2 Rocket Facility
- MOHAA Map List
  - Custom Objective Maps
  - Custom DeathMatch Maps
  - Theme Maps
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    - Allied Assault
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  - Custom Single Player Maps
  - Liberation Maps
  - Default/Stock Maps
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- MOHAA Voice Taunts
- MOHSH Voice Taunts
- MOHAA Keys (Output)
- Player Model List
- Reborn CVARs
- Server CVARs
- Unnamedsoldier CVARs & Bindlist
- SkulpingNipple[NL]
  - Put your own fonts ingame
    - Requirements
    - Installation
    - Take a Font
    - Fontgen

- DXTBMP 1
  - Photoshop
  - DXTBMP 2
  - Pakscape
- Steven McMillan
  - Adding an Elevator
- Sturmi
  - Mapping Tutorials (*In German*)
- Swagel
  - OpenSCR Guide
- The Rjukan Project
  - Alternative Elevator (func\_door)
  - Areaportal Tutorial
    - Introduction
    - The Problem
    - How area portals work
    - How area portals don't work
    - How to insert area portals in your map
    - Controlling area portals manually
  - Bjarne's Scripting Tutorial
    - Game Module Classes
    - Game Module Classes SH
    - Scripting Language, Appendix A, Commands
    - Scripting Language, Appendix B, Classes, and how they are used
    - Scripting Language, Appendix C, Script architecture
    - Scripting Language, Tutorial
    - Script Commands – Huddraw
    - Script File
  - Bomb Dropping Planes Tutorial
  - Caulk and Clip Tutorial
    - Areaportal
    - Black
    - Blank\_lightmap
    - Carpetclip
    - Caulk
    - Caulkshadow
    - Caulksky
    - Clip
    - Clipall
    - Dirtclip
    - Foliageclip
    - Glassclip
    - Grassclip
    - Gravelclip
    - Grillclip
    - Hedgehogclip
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    - Ladder
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    - Metalclip
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- Monster
- Mudclip
- Nodraw
- Origin
- Paperclip
- Patharea
- Playerclip
- Portal
- Puddleclip
- Rain
- Sandclip
- Skip
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- Stoneclip
- Sunblock
- Switchflat
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- Tankclip
- Trigger
- Vehicleclip
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- Waterskip
- Weapon
- Woodclip
- Explanations to the texture surface parameters
- Example Map with Caulks & Clips
- Ladders that work down as well as up
- Making Driveable Tank
- Objectives – Combination
- Objectives – Random Placement
- Readme File Design
  - Intro
  - Heading
  - Abstract
  - Index
  - Installation instructions
  - Core data
  - History / Strategy / Fun facts / About / Usage
  - Errors
  - Version History
  - Contact
  - Copyright
  - Greetings
- Step by Step House Construction
- 3-Point Clipping
- AI Shooting at what YOU want
- AI Tutorial
  - Basic AI
  - Making the AI roll in the poker chips
  - The AI won't play?

- Barrels
- Breakable Windows
- Convert map from OBJ to DM
  - Rename and move the map file
  - Write a new .scr file
  - Update references to the new names
- Custom Textures
- Dimensions to use in mapping
  - The Player
  - Capabilities of the Player
  - Steps of Stairs
  - Doors
  - Mapping dimensions
  - Size and ladders
- Error FAQ
- Filming in MOHAA
  - Getting MOHAA into a video format
  - Useful console commands
  - How to get rid of the 'Press fire to join' message when in spec
  - Removing the Avatars (the symbols above player's heads)
  - Making a Script
- Fog that pulsates
- Give player guns & ammo (SP)
- LOD Terrain Design, using an image
  - Foreword
  - Draw a brush
  - Make it a LOD
  - Select the LOD
  - Save to Image
  - Open the .tga
  - Redraw it
  - Back to Radiant
  - Load the .tga
  - Satisfied?
- Make Moving Vehicle
- Medics
- Naming a file
  - Map file name
  - PK3 file name
  - Readme file name
  - So why these naming conventions?
- Objectives – Bombs (More than 1)
  - What to change in the map?
  - What to change in the script?
  - Variants
- Parameters on Entities
- Parameters when developing a map
- Patch meshes and bevels
- PK3 Making
  - About PK3s
  - What's in a PK3
  - Creating a PK3

- Common Mistakes
- Rotating Door
  - Construction
  - Setting up a func\_rotatingdoor's keys
  - Correct Angle Settings
  - Notes
- Scores and Statistics
  - Using a trigger and a map script
  - Using an external tool that polls the server's query port
  - Reading the server log file
- Scripting Engine Characteristics
- Skybox creation with Terragen
  - Get Terragen
  - Play with Terragen
  - Terragen Tips
  - Rendering a skybox
  - Convert the files
  - Create a shader
  - Naming and placing the textures
  - Use the Sky
  - Problems
- Skyboxes and Sunlight
- Snow Tutorial
- Solutions to Common Errors on Your First Map
  - Radiant Problems
  - Compiling Problems
  - Map Loading Problems
- Supporting more features in Radiant
- Teleportation
- Traps
- Use CVARs to accept input via rcon, local keypress etc.
- VIS Designing
  - What is structural and detail brushes?
  - How to use your new knowledge?
  - What you don't need to look at?
  - Starting Point
  - Using Filters
  - After activating the filters
  - Making the right brushes detail
  - Making the right brushes structural
  - What to do now?
  - Area portals in doors
  - Manual VIS with vis\_leafgroup brushes
- Volume Damage
- TheShadow
  - DM Map List (Incomplete)
  - OBJ Map List (Complete)
- TheStorm
  - Blocksize Guide
  - Green Detail Information
  - Rotating Fan
  - VIS for Dummies

- VIS\_leafgroup Guide
- Thomas McGuire
  - MOHAA Tweak Guide
    - Troubleshooting
    - Config File
    - Graphics
    - Audio
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    - Conclusion
- Thor
  - Adding Custom Sound
  - Cutting Corners
  - Door Locked Sound
- Trinisica
  - HDRI & Luminance Space
    - HDRI; High Dynamic Range Image
    - High Dynamic Range in Reflection/Refractions
    - HDRI for Illumination
    - Clamped and Unclamped
  - Polymodeling
    - Quick Explanation of Poly Modeling
    - How Meshsmooth works
  - Shaders
    - What's a Shader?
    - Diffuse; Color Reflection
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  - Virtual Studio
    - The Plane Version of the Virtual Studio Setup
    - Flavor: Outside
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- Turret\_toad
  - MOH Hand Book
    - Introduction
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    - The Radiant Interface
      - Intro to Radiant
      - Setting up Radiant & MBuilder
      - Viewports and Navigation of 3D space
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      - Clipper Tool
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- [General Rules/Tips](#)
- [Resource Links](#)

- **VATEC6000**
  - [PakRadar – How to set up a custom file list for your server Tutorial](#)
- **ViPER**
  - [Creating seamless textures](#)
- **VonderCrunch (Vonderbakluft & Crunch)**
  - [BSP Compile Options](#)
  - [CSG Subtract](#)
  - [Custom Sound Info](#)
  - [Easy ways to screw up your map](#)
  - [Manual VIS Help](#)
  - [MOH Radiant Toolbar Options](#)
  - [MP Dog Script](#)
  - [Multiple Map Loading Screens](#)
  - [Radiant Tips](#)
  - [Set-up Radiant](#)
- **Voxel**
  - [Doors](#)
    - [Sliding Door](#)
    - [Rotating Door](#)
  - [Elevators](#)
- **Walkthroughs & Game Guides**
  - [Allied Assault](#)
    - [Strategy Guide \(In German\)](#)
    - [HUD Guide](#)
    - [Walkthrough](#)
    - [Walkthrough A](#)
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    - [Walkthrough C](#)
    - [Walkthrough Dutch Version](#)
    - [Weapons Guide](#)
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  - [Breakthrough](#)
    - [Walkthrough](#)
- **Wizzler[NL]**
  - [MOHAA Reborn Rights Spreadsheet](#)
- **Wolf-Man**
  - [Skinning Guide using Paint Shop Pro](#)
- **xNULL (Forum Posts)**
  - [.30 Cal Browning in Multiplayer](#)
  - [3D Model of Stalingrad Map](#)
  - [Add Apply Button to Menu](#)
  - [Add Music to Maps](#)
  - [Adjusting Number of Grenades per Map](#)
  - [Anti-Bad Commands](#)
  - [Array Check Help](#)
  - [Array to Create a Menu](#)

- **Array to Spawn a Trigger in Different Location – Question**
- **Arrays & Floating Variables**
- **Arrays & Setsizes**
- **Attach Model to Head but change Origin**
- **Audio Triggers – Randomising**
- **Basic Template for RCON Commands on Players (Punishment)**
- **Bomb Only sets First Round Bug (Custom Map)**
- **Calling Game Sounds**
- **Camper's Name Printed**
- **Changing from FFA Map to OBJ Map**
- **Check what Weapon a Player has**
- **Counting Deaths**
- **Current Date & Time Display**
- **Custom Texture Masking Issues**
- **Damage Event Help**
- **Division**
- **Dynamic Melt Points**
- **ERROR – MAX\_EDGE\_LINES**
- **Flag Attached to Player**
- **Floating Triggers**
- **Floats & Memory**
- **FX Dummy.tik Models to Act as Speakers**
- **Game Crashes when Shooting in Custom Map**
- **Get Client Num(ID)**
- **Get Location of Player Spawn Point on the Fly**
- **Getting Maps to work with Mefy's Maplist**
- **Give Weapon (Only once)**
- **Headshot Only with Sniper & Disable Other Hitboxes**
- **HUD Text with Shader Background**
- **Huddraw Helper**
- **Huddraw\_Virtualsize Problem**
- **Hurt Trigger & Hide Command Issues**
- **If/Else on Sound Effects**
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- **Know when a player is Walking or Running**
- **Lift Scripting Help**
- **Lightning Strike**
- **LightRay 3D Basics**
- **List of RGB Colors, usable in MOHAA**
- **Local.Player.Fireheld Info**
- **Local.Statix Setsize & Bounding Boxes for Spawning Object**
- **Map Info Mod**
- **Means of Death – Questions**
- **Mefy Location Creator Issue**
- **Mefy's Gametypes Maplist & Map Info Mod**
- **Modding Sound Parameters**
- **Model Bound Box(es)**
- **MOHAA to Q3**
- **Multiplayer Health via Script**
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- **NoDraw Issues on Allied Assault**



- Placing HUDs where I want them to Show
- Player dies and spawns an ammo box (Spearhead)
- Player Jump Higher – Velocity
- Player Grenade Control (Spearhead)
- Player Skin Checker
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- Proper Use of Centerprint Command
- Purple's Event Handler Issues
- Push Player with a Bash
- Query Players within Script
- QuickSort
- RCON Command to Shuffle Teams
- RCON Force Weapon on the Fly
- RCON Menu – Linkcvar for Server Variables
- Referencing Script – Achievement Tracking
- Regen Health Help with Script
- Remove Static Model Entity from Custom Map
- Re-Skinned Default Tree Models Blinking Bug
- Scoreboard – Bot Script Help
- Screwed Sprites
- Script to Rotate CFG (Config) Files
- Server Redirect to other IP
- ServerSide Menu System Concept
- Set CVAR for Randomising Maplist
- Single Player Taunt & Weapon Sound Fix
- Sor's Bot Scoreboard – Player Name Question
- Sor's Bot Info
- Spawn Event and FreezeTag Objective
- Spawning Fire that Damages Player
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- Teleport Holding Use Key
- Teleport Issues
- Teleported Player's View Angle
- The Floor is Lava – Death Trigger
- Tracking Player's Location, Displaying it on HUD
- Trail Effect
- Trigger for Player in Area
- Trigger on a Dead Body
- Trigger Sizes
- Trigger to Kick Player
- Triggers and Spawns – Accessing Spawn Targetnames from Map Script
- Understanding the Reborn Intermission Event
- Understanding Triggers and the Easy Way to Create Them
- Variable Scope Possibility
- Weapon Check – Results in NULL – Help
- Weapon Swapping Issue
- When to use Level Waittill Prespawn and Level Waittill Spawn
- **YoChoy**
  - How to port brush work into Milkshape
- **Zagz**
  - Avatar Tutorial
  - Crosshair Tutorial

- Custom Scoreboard and Loading Screen
  - Custom Start-Up and Death Messages Tutorial
- Zappa
  - SCR File Association Fix Windows 10
  - Sublime Text 3 Installation Guide
  - Try, Catch and Throw Exception Handling
  - Velocity and Speed
- Zom-B
  - Milkshape 3D Basics and Fundamentals
    - Intro
    - Fundamentals
    - Simple Shapes
    - Extrude Modelling
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